which produced dilatation or increased number of open capillaries instead of the expected constriction as found in the peripheral arterioles.

The pulmonary circulation rate is being studied by Blumgart and Weiss of Boston. They inject radium emanation seeds into an arm vein and record their passage through the great vessels. Using the principle that ionized gas transmits a current and that radiation ionizes the gas, they appropriately located gas chambers over the greater vessels in windows in a lead screen on the chest wall, and recorded the currents passing through these chambers.

The circulation rate in congestive heart failure was found to be diminished as was generally believed. The causes of the cyanosis in emphysema was found not to be due to pulmonary circulation rate but rather to structural changes in the alveolar walls.

Pulmonary circulation rate measurement gives us a knowledge of the quantity of blood in the lungs, and suggests means of solving the cause of such problems as acute edema of the lungs.

The brain is another region where the vascular behavior has not been directly studied. Cobb, Forbes, and Wolff of Boston directly observed the capillaries and minor vessels on the surface of the cerebral hemispheres. They demonstrated that the caliber of these vessels was regulated by an intrinsic mechanism similar to the nervous and muscular vascular control found elsewhere in the body. Adrenalin caused sympathetic stimulation and vascular contraction as it did in other peripheral arteries. Other drugs influencing vessel caliber were likewise studied.

Velocity of the pulse wave in the peripheral arteries has recently been quite accurately recorded by Turner and Hermann of New Orleans. They used an ionizing helium lamp mechanism devised by Turner, which records currents produced by microphone reception of the wave. They thought that they were able by this method to dissociate the elements of pulse wave velocity, namely, artery caliber and elasticity as well as blood pressure, and to evaluate the functional efficiency of the peripheral arteries.

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Radiology

The Status of the Roentgenologist—"Seeing is believing" is an old adage. Nowhere is this more easily exemplified than in medicine, for sight is relied on more and more in arriving at a diagnosis. Through the advent of the x-ray the hidden recesses of the body have been opened to inspection. As time has gone on, especially during the last decade, greater refinements in technique, associated with the study of correlated postmortem findings, has enabled us to visualize and recognize accurately certain pathologic processes not heretofore suspected prior to death. A complete evaluation of the advances in modern everyday diagnosis made possible through the aid of Roentgen's discovery is impossible, but it is sufficient to say that the clinician who attempts practice of any kind without ready access to it is practicing under a very distinct handicap. Even the laity have been educated to the stage where they frequently request x-ray examination prior to treatment.

Early diagnosis of obscure diseases is an accomplished fact. McVicar of the Mayo Clinic, in speaking of carcinoma of the stomach, says: "In our opinion roentgenologic examination excels any and all other means of recognizing cancer early." The same is true of gastric and duodenal ulcers, colonic diverticuli, pulmonary conditions, bone disease, and others. Recently in a discussion before the Southern California Medical Society, Snure showed pregnancy of the ninth week, through demonstration of the hazy bony shadows of the fetus, before concrete evidence of its presence by the usual clinical signs. Of late, gall bladder visualization has opened new fields in the diagnosis and physiology of liver function. These are instances of the daily use of the x-ray. It enables one to visualize, but the interpretation of the visualized picture is more difficult. The taking of films and the production of shadow pictures has been so simplified that almost anyone can operate a machine, consequently findings are often interpreted by men who are not qualified to interpret. Faulty diagnosis is not so often due to failure of the action of the ray on the film as to misinterpretation of the picture taken. This is the reason for the radiologist. First of all he must be a good technician who knows the mechanics of his machines, and the physics involved in the production of shadows, for in some patients the work must be done with a ray of minimum penetration, while in others a ray of maximum penetration is necessary to bring out detail which will otherwise be missed. Next he must be well grounded in the medical sciences of anatomy, physiology and pathology, so as to know the normal and the abnormal in shadow form. Finally he must be a good physician to correlate symptomatology with demonstrated pathology, for every day he is called upon to interpret the shadows which he sees as normal or abnormal. Even with this groundwork, mistakes are made, for no two individuals are exactly alike anatomically, nor does pathology always duplicate itself in a second individual. Seeing is believing, but one must know what is seen before one can believe.

Granting that the roentgenologist has surmounted these limitations, he is, then, one of the "key men" of medicine today. He, with the clinical pathologist, confirms or rules out the diagnoses of his associates; he actually, and sometimes accidentally, demonstrates early and unsuspected lesions which have produced negligible or minimal symptoms. On his decision frequently rests the prognosis and treatment of the patient; without him diagnostic medicine would not be on the sound scientific basis that it is. The time has passed when he is a technician pure and simple. He is a consultant to all the specialties and should be looked upon as such.

Sir Humphry Rolleston in his MacKenzie Davidson lecture says: "It is natural that there

should be a wholesome rivalry between the pure clinicians and the radiologists analogous to that between the clinicians and the laboratory workers as to who shall be regarded as the decisive makers of the diagnosis; it is therefore important that clinicians and radiologists should be in constant touch and consult frequently on equal terms, each thus acquiring the special knowledge and perspective of the other. Like the bacteriologist, the radiologist should form part of the team for clinical practice and research, and should not be segregated in his department. The radiologist is the helpful colleague of the clinician, and they are both judged as regards their accuracy or mistakes by the conditions found on the operating table or in the postmortem room; it is therefore most essential that the radiologist should, like the clinician, follow through to final demonstration the cases on which he has expressed an opinion, and be imbued with pathological knowledge."

In the establishment of a section on radiology a year ago by the American Medical Association, cognizance was taken of this. From a technical standpoint the radiologist is a true specialist, but at the same time he is a clinical adviser to each of the severally recognized subdivisions of medicine. His practice does not come directly from the laity, but is essentially one referred by brother practitioners who send their patients for expert personal opinion.

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Otorhinolaryngology

Otitis Media in Small Children—Examination of the tympanic membrane ought to be a part of the routine examination of all young children. Every pediatrician and otologist has had the experience of having a child held for observation, or treated for various conditions, discharge unexpectedly an amount of pus from the ear, immediately followed by a decided improvement of all other symptoms. Otitis media is frequently met with not only in infants, but in children old enough to talk and tell their troubles. Many of us have seen abscessed ears where no pain was complained of. These facts serve to impress us with the necessity for routine otological examination and with the fact that various symptoms referable to the nervous, respiratory and gastro-intestinal systems may be produced by acute purulent otitis media.

Dean McLierle under the caption of "Otitis Media in Infants," in the September issue of the *Annals of Otology, Rhinology and Laryngology,* very ably presents a convincing number of these cases, and especially of those showing gastro-intestinal disturbances. He points out the fact that it is quite possible to have a purulent mastoid infection with very little, if any, infection in the tympanic cavity; that the pus may be blocked off within the mastoid cavity, and the infection of the tympanum clear up. That this does happen occasionally, I am sure, for I have had that experience; but if it is very frequent, I have been guilty of overlooking a goodly number. The gastro-intestinal system of the child is certainly delicately balanced and all pediatricians frequently see disturbances here associated with acute purulent otitis media. I believe we are inclined to think the abscessed ear a complication of the gastro-intestinal disturbance, when it is in fact the causative factor.

Alden and Lyman reported seventy consecutive autopsies on infants who had died from infantile atrophy and infantile diarrhea, and stated that suppuration of the middle ear was found in all the cases. Thirty cases had been diagnosed as acute otitis media in life, while forty additional ones were found at autopsy. Many of these little patients have mastoid involvement undiagnosed, with gastro-intestinal symptoms in which frequent slimy, greenish stools are present and profound dehydration obtains. I have seen cases where there was a spontaneous external rupture of the mastoid, and still the middle ear involvement was considered of secondary importance.

The question of diagnosis is not always easy in these little patients, at least in cases of mastoid involvement which require mastoidectomy. Examination of the tympanic membrane, which may be obscured by débris of the external auditory canal of a putty appearance, due to an infection of the skin of the auditory canal, is not simple. This must be thoroughly washed and wiped out, without making much pressure upon the tympanic membrane. Again the tympanic membrane may be, and frequently is, covered with a white layer of exfoliated epithelium that in itself is characteristic of acute purulent otitis media. It may not look red and inflamed and to the inexperienced eye is viewed as the normal tympanic membrane. In cases where mastoiditis is suspected, greater difficulty will be met even for the experienced otologist; but perhaps a fair working rule to follow would be, where an x-ray shows one or both mastoids cloudy, with one or both ears draining profusely for several days, without relief of symptoms, a severe mastoid infection is probably present, and if the gastro-intestinal or temperature symptoms are urgent, a mastoidectomy is indicated.

If the tympanic membrane has not ruptured or has not been incised, I believe it safe counsel to say when in doubt, sterilize the external auditory canal and thoroughly incise the tympanic membrane. If an occasional tympanic membrane is opened unnecessarily it will quickly heal if antiseptic precautions have been taken, and no harm will be done.

In view of the fact that gastro-intestinal and other symptoms are frequently the result of an acute purulent otitis media, we wish again to emphasize the importance of examination of the tympanic membrane as a part of the routine examination of all young children.

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